CPE301 – SUMMER 2021

Design Assignment 1

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Directory: https://github.com/ErnestoIbarra333/ErnestoIbarra.git

1. COMPONENTS LIST AND CONNECTION BLOCK DIAGRAM w/ PINS

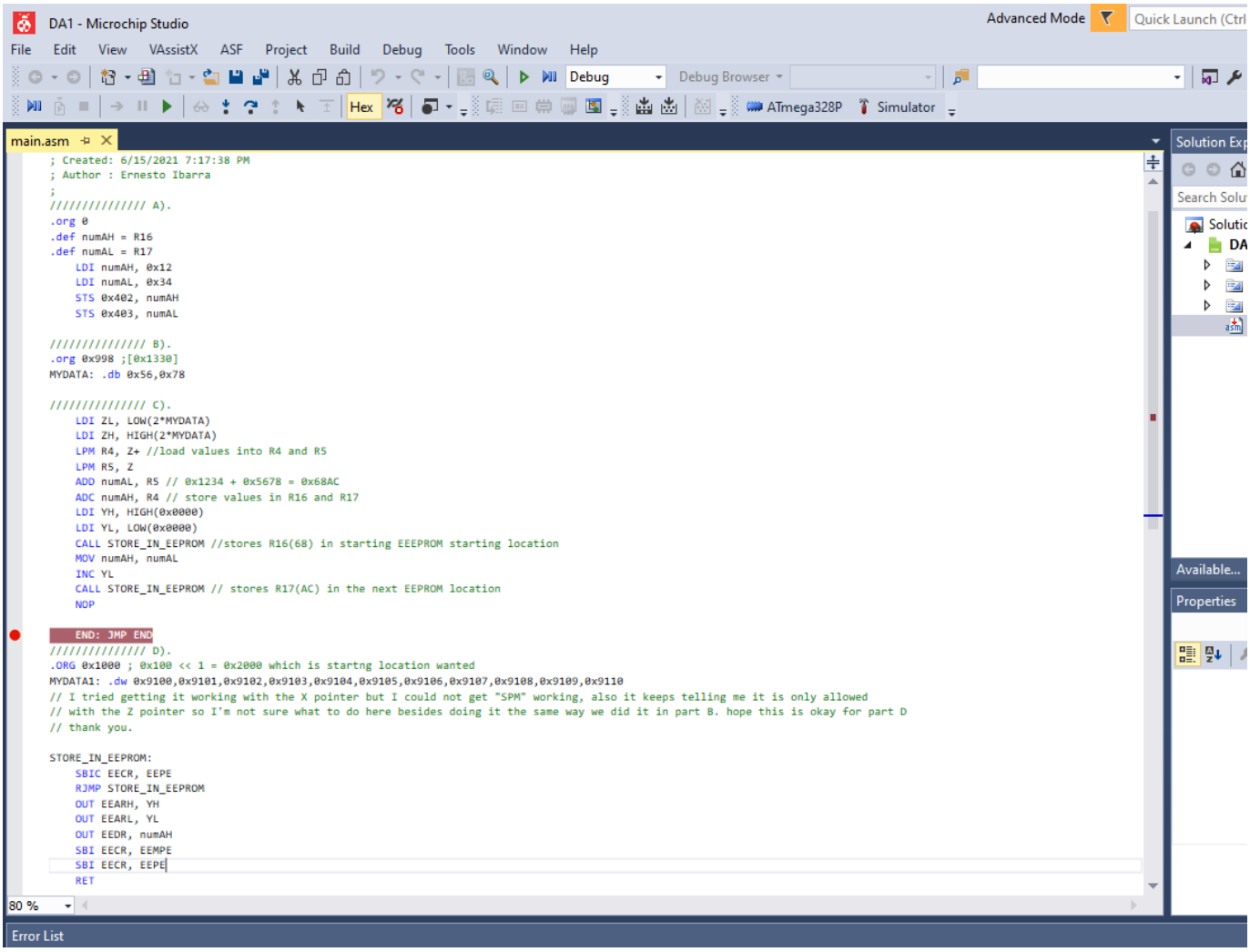
So far, we only used Atmel Studios and nothing else just yet. We will be using the atmega328p board soon.

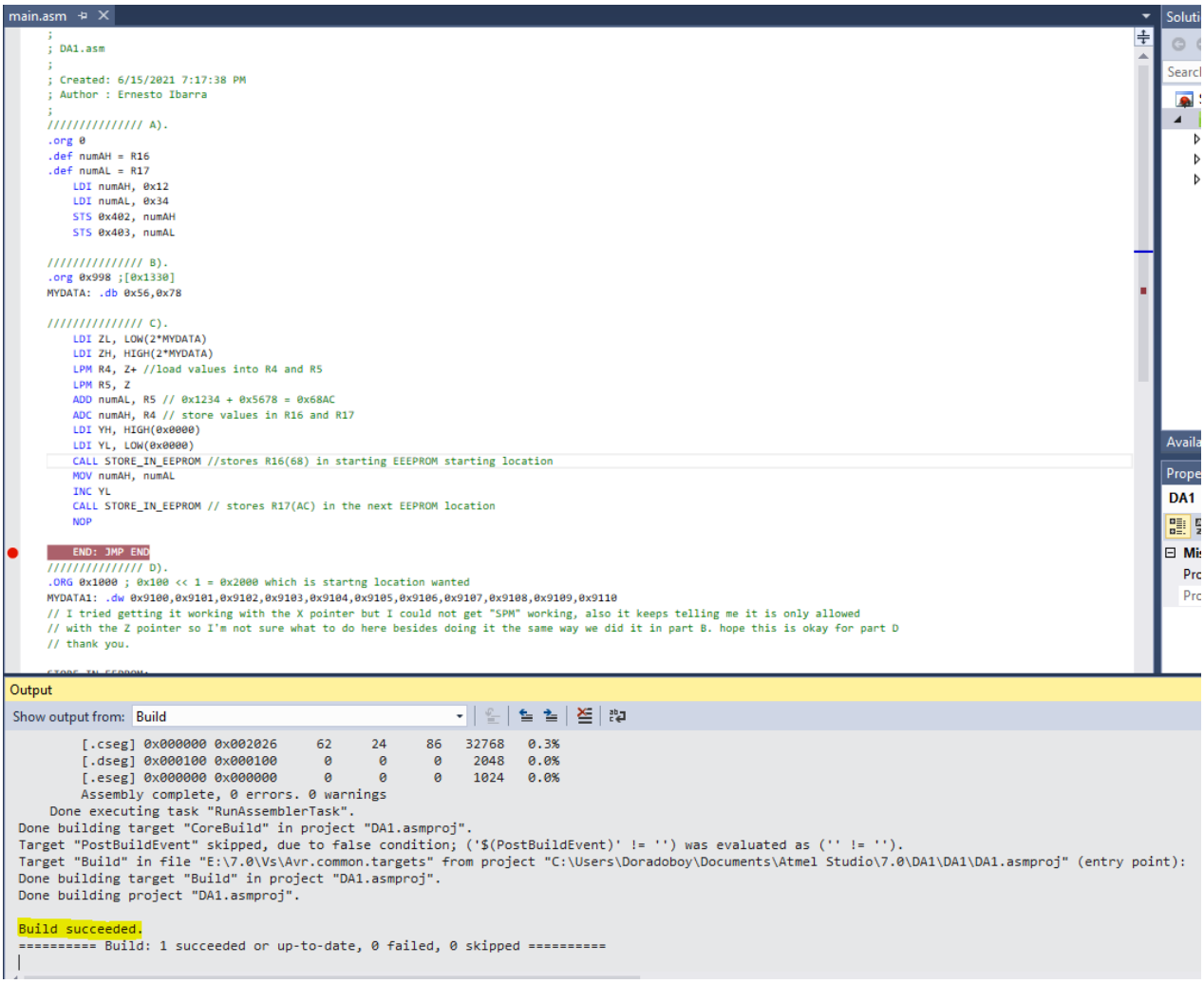
2. INITIAL/MODIFIED/DEVELOPED CODE OF TASK 1/A

No initial code given

3. DEVELOPED MODIFIED CODE OF TASK 1/A/B/C/D/E

Here is my code screenshot as well as the actual code copied and pasted. I also put a screenshot of my code building successfully.


DA1 - Microchip Studio
Advanced Mode
Quick Launch (Ctrl
File Edit View VAssistX ASF Project Build Debug Tools Window Help
Debug
Debug Browser
Hex
ATmega328P
Simulator
main.asm
; Created: 6/15/2021 7:17:38 PM
; Author : Ernesto Ibarra
;
//////////////// A).
.org 0
.def numAH = R16
.def numAL = R17
LDI numAH, 0x12
LDI numAL, 0x34
STS 0x402, numAH
STS 0x403, numAL
//////////////// B).
.org 0x998 ;[0x1330]
MYDATA: .db 0x56,0x78
//////////////// C).
LDI ZL, LOW(2*MYDATA)
LDI ZH, HIGH(2*MYDATA)
LPM R4, Z+ //load values into R4 and R5
LPM R5, Z
ADD numAL, R5 // 0x1234 + 0x5678 = 0x68AC
ADC numAH, R4 // store values in R16 and R17
LDI YH, HIGH(0x0000)
LDI YL, LOW(0x0000)
CALL STORE_IN_EEPROM //stores R16(68) in starting EEEPROM starting location
MOV numAH, numAL
INC YL
CALL STORE_IN_EEPROM // stores R17(AC) in the next EEPROM location
NOP
END: JMP END
//////////////// D).
.ORG 0x1000 ; 0x100 << 1 = 0x2000 which is startng location wanted
MYDATA1: .dw 0x9100,0x9101,0x9102,0x9103,0x9104,0x9105,0x9106,0x9107,0x9108,0x9109,0x9110
// I tried getting it working with the X pointer but I could not get "SPM" working, also it keeps telling me it is only allowed
// with the Z pointer so I'm not sure what to do here besides doing it the same way we did it in part B. hope this is okay for part D
// thank you.
STORE_IN_EEPROM:
SBIC EECR, EEPE
RJMP STORE_IN_EEPROM
OUT EEARH, YH
OUT EEARL, YL
OUT EEDR, numAH
SBI EECR, EEMPE
SBI EECR, EEPE
RET
80 %
Solution Exp
Search Solu
Solutic
DA
Available...
Properties
Error List

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       LDI YH, HIGH(0x0000)
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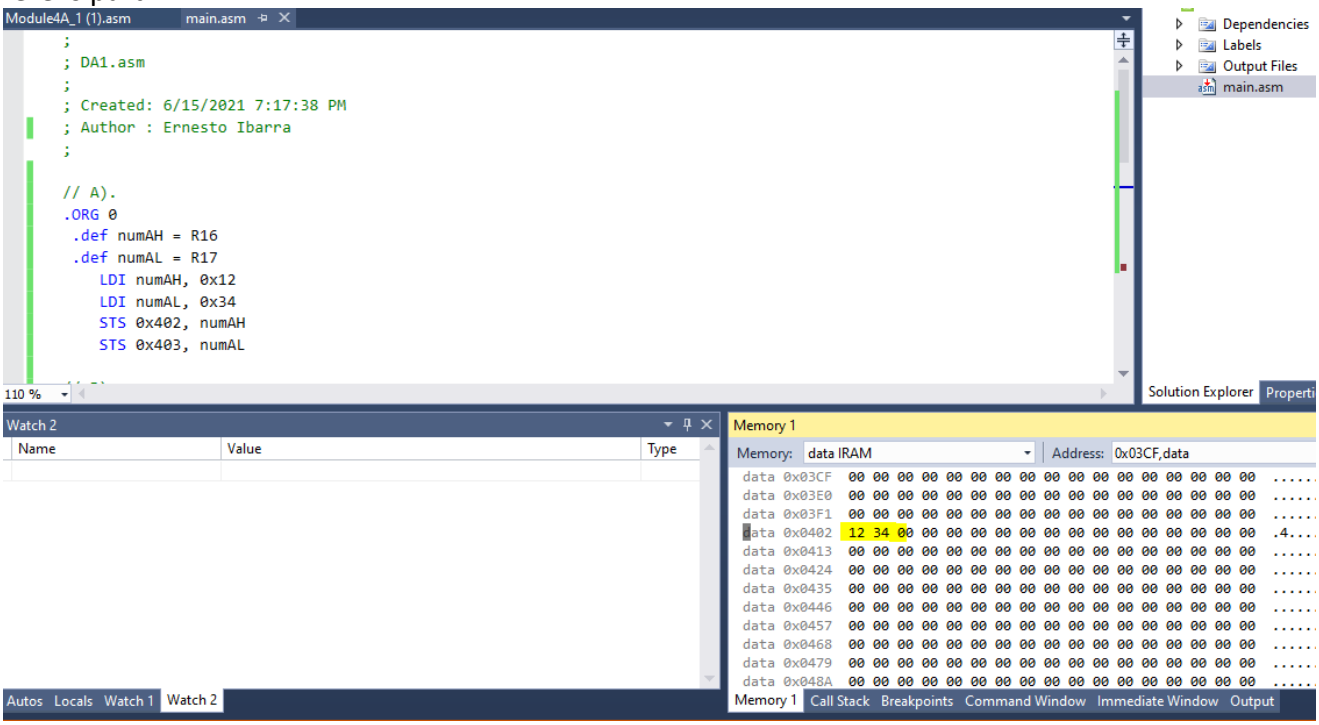
        SBIC EECR, EEPE
        RJMP STORE_IN_EEPROM
        OUT EEARH, YH
        OUT EEARL, YL
        OUT EEDR, numAH
        SBI EECR, EEMPE
        SBI EECR, EEPE
        RET
```

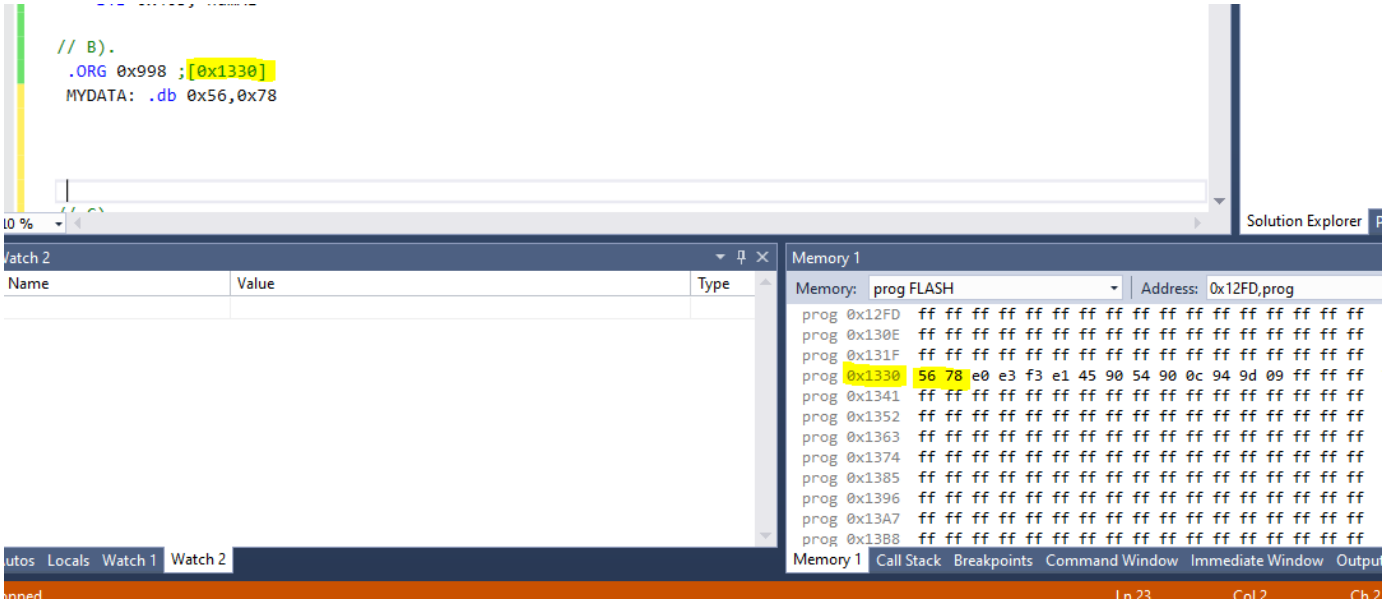
4. SCHEMATICS

5. SCREENSHOTS OF EACH TASK OUTPUT (ATMEL STUDIO OUTPUT)

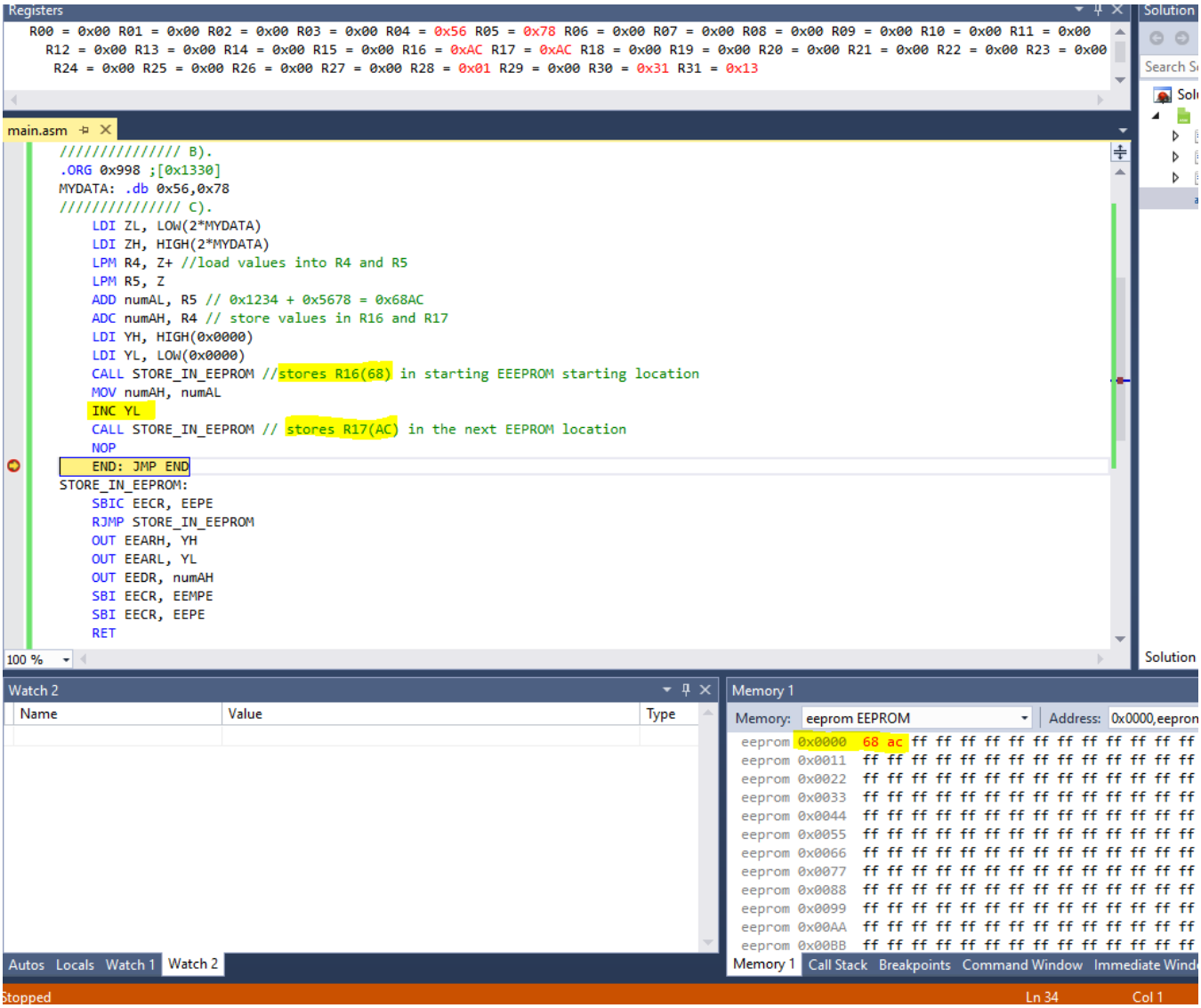
1A). Here is part A



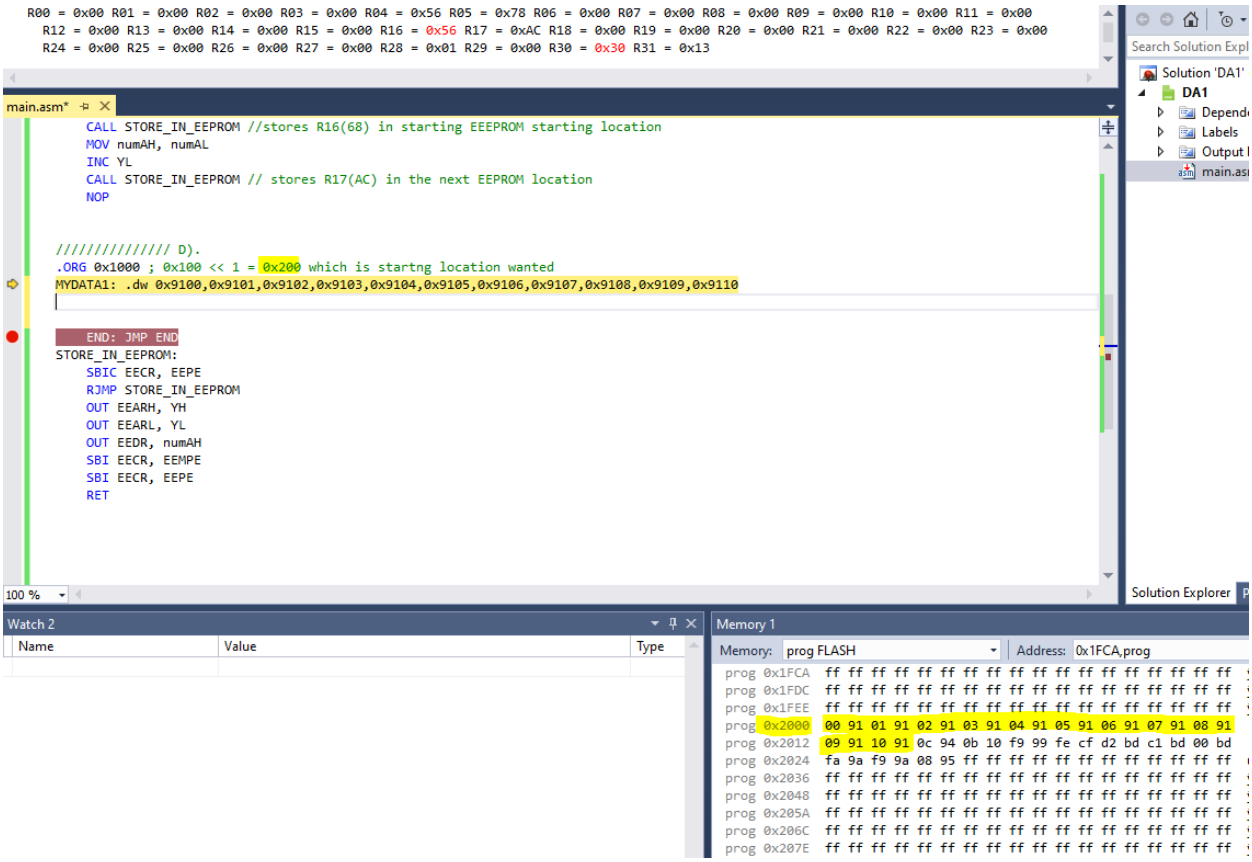
1B). Here is part B



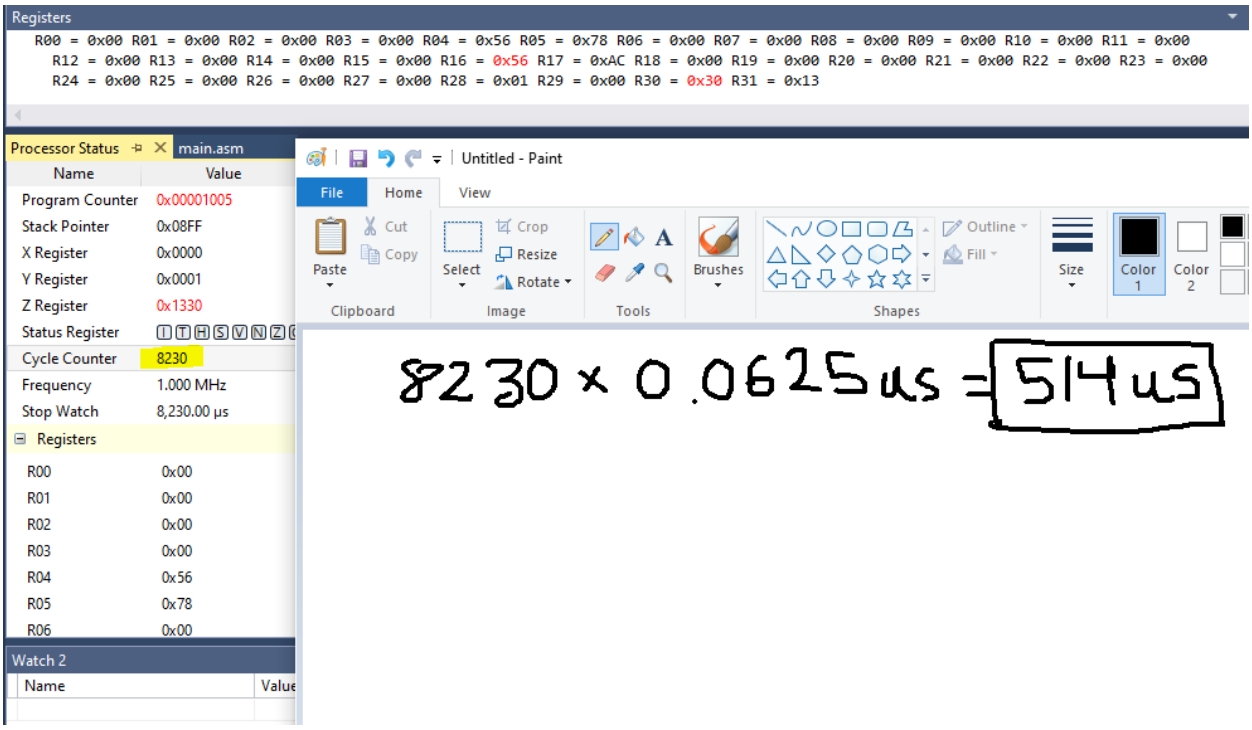
6. **1C).** Here is part C, I mostly commented the entire code so It would be easier to see the comments right next to the code instead of commenting it here. Hopes it's ok.



7. **1D).** Here is part D, I tried getting it working with the X pointer but I could not get "SPM" working, also it keeps telling me it is only allowed with the Z pointer so I'm not sure what to do here besides doing it the same way we did it in part B. hope this is okay for part D thank you.



8. **1E).** Here is part E, the program will take approximately 514us to execute since we have about 8230 cycles in this program.



9. SCREENSHOT OF EACH DEMO (BOARD SETUP)

10. VIDEO LINKS OF EACH DEMO

11. GITHUB LINK OF THIS DA

https://github.com/ErnestoIbarra333/ErnestoIbarra.git

Student Academic Misconduct Policy

http://studentconduct.unlv.edu/misconduct/policy.html

"This assignment submission is my own, original work".

NAME OF THE STUDENT